

1.4

Sketching Intersections

Goal Sketch simple figures and their intersections.

VOCABULARY

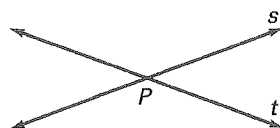
Intersect

Intersection

POSTULATE 3: INTERSECTION OF TWO LINES

Words If two lines intersect, then their intersection is a _____.

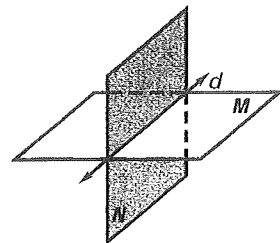
Symbols Lines s and t intersect at _____.



POSTULATE 4: INTERSECTION OF TWO PLANES

Words If two planes intersect, then their intersection is a _____.

Symbols Planes M and N intersect at _____.



Follow-Up

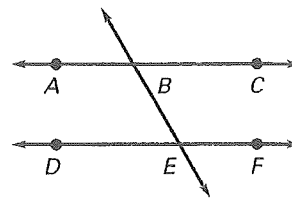
Draw lines k and l that intersect at point Z .

Draw lines m and n that do not intersect.

Example 1 Name Intersections of Lines

Use the diagram at the right.

- Name the intersection of \overleftrightarrow{AC} and \overleftrightarrow{BE} .
- Name the intersection of \overleftrightarrow{BE} and \overleftrightarrow{DF} .
- Name the intersection of \overleftrightarrow{AC} and \overleftrightarrow{DF} .

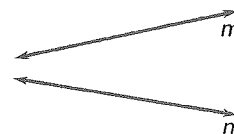
**Solution**

- \overleftrightarrow{AC} and \overleftrightarrow{BE} intersect at _____.
- \overleftrightarrow{BE} and \overleftrightarrow{DF} intersect at _____.
- \overleftrightarrow{AC} and \overleftrightarrow{DF} do not appear to _____.

Follow-Up

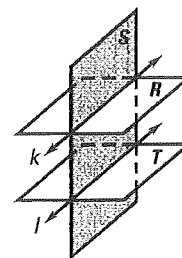
In Example 1, do you think that \overleftrightarrow{AC} and \overleftrightarrow{DF} will ever intersect? Explain.

In the figure at the right, do you think that lines m and n will ever intersect? Explain.

**Example 2** Name Intersections of Planes

Use the diagram at the right.

- Name the intersection of planes S and R .
- Name the intersection of planes R and T .
- Name the intersection of planes T and S .

**Solution**

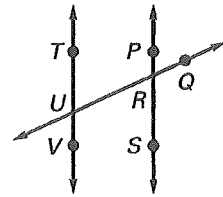
- Planes S and R intersect at _____.
- Planes R and T do not appear to _____.
- Planes T and S intersect at _____.

✓ **Checkpoint** Use the diagram shown.

1. Name the intersection of \overleftrightarrow{PS} and \overleftrightarrow{QR} .

2. Name the intersection of \overleftrightarrow{TV} and \overleftrightarrow{QU} .

3. Name the intersection of \overleftrightarrow{PS} and \overleftrightarrow{UV} .

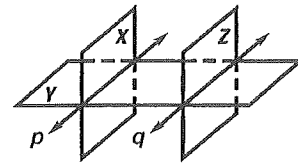


Use the diagram shown.

4. Name the intersection of planes X and Y.

5. Name the intersection of planes Y and Z.

6. Name the intersection of planes Z and X.



Example 3 Sketch Intersections of Lines and Planes

Sketch a plane. Then sketch each of the following.

- a line that is in the plane
- a line that does not intersect the plane
- a line that intersects the plane at a point

Solution

a.

b.

c.

Example 4**Sketch Intersections of Planes**

Sketch two planes that intersect in a line.

Solution

1. Draw one plane as if you are looking straight at it. Shade the plane.
2. Draw a second plane that is horizontal. Shade this plane a different color.
3. Draw the line of intersection. Use dashed lines to show where one plane is hidden.

Follow-Up

Try to sketch two planes that intersect in exactly one point. Why is this impossible?



Checkpoint Sketch the figure described.

7. Two lines that intersect a plane at the same point.

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8. Two planes that intersect in a line.

-
9. Two planes that do not intersect.